



BUILDING CODE COMPLIANCE OFFICE (BCCO)  
PRODUCT CONTROL DIVISION

MIAMI-DADE COUNTY, FLORIDA  
METRO-DADE FLAGLER BUILDING

140 WEST FLAGLER STREET, SUITE 1603  
MIAMI, FLORIDA 33130-1563  
(305) 375-2901 FAX (305) 375-2908

## NOTICE OF ACCEPTANCE (NOA)

[www.miamidade.gov](http://www.miamidade.gov)

Eastern Metal Supply, Inc.  
3600 23<sup>rd</sup> Avenue South  
Lake Worth, Florida 33461

### SCOPE:

This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed by Miami-Dade County Product Control Division and accepted by the Board of Rules and Appeals (BORA) to be used in Miami Dade County and other areas where allowed by the Authority Having Jurisdiction (AHJ).

This NOA shall not be valid after the expiration date stated below. The Miami-Dade County Product Control Division (In Miami Dade County) and/or the AHJ (in areas other than Miami Dade County) reserve the right to have this product or material tested for quality assurance purposes. If this product or material fails to perform in the accepted manner, the manufacturer will incur the expense of such testing and the AHJ may immediately revoke, modify, or suspend the use of such product or material within their jurisdiction. BORA reserves the right to revoke this acceptance, if it is determined by Miami-Dade County Product Control Division that this product or material fails to meet the requirements of the applicable building code.

This product is approved as described herein, and has been designed to comply with the High Velocity Hurricane Zone of the Florida Building Code.

### DESCRIPTION: "Bertha HV" Aluminum Accordion Shutter System

**APPROVAL DOCUMENT:** Drawing No. 07-103, titled "Bertha HV Accordion Shutter System", sheets 1 through 10 of 10, prepared by Tilteco, Inc., dated April 24, 2007, last revision #1 dated July 09, 2007, signed and sealed by Walter A. Tillit Jr., P.E. bearing the Miami-Dade County Product Control Approval stamp with the Notice of Acceptance number and Approval date by the Miami-Dade County Product Control Division.

### MISSILE IMPACT RATING: Large and Small Missile Impact

**LABELING:** Each unit shall bear a permanent label with the manufacturer's name or logo, city, state and the following statement: "Miami-Dade County Product Control Approved", unless otherwise noted herein.

**RENEWAL** of this NOA shall be considered after a renewal application has been filed and there has been no change in the applicable building code negatively affecting the performance of this product.

**TERMINATION** of this NOA will occur after the expiration date or if there has been a revision or change in the materials, use, and/or manufacture of the product or process. Misuse of this NOA as an endorsement of any product, for sales, advertising or any other purposes shall automatically terminate this NOA. Failure to comply with any section of this NOA shall be cause for termination and removal of NOA.

**ADVERTISEMENT:** The NOA number preceded by the words Miami-Dade County, Florida, and followed by the expiration date may be displayed in advertising literature. If any portion of the NOA is displayed, then it shall be done in its entirety.

**INSPECTION:** A copy of this entire NOA shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This NOA consists of this page 1, evidence submitted pages E-1, E-2, & E-3 as well as approval document mentioned above.

The submitted documentation was reviewed by Helmy A. Makar, P.E., M.S.



*Helmy A. Makar*  
08/02/2007

NOA No. 07-0509.14  
Expiration Date: 08/02/2012  
Approval Date: 08/02/2007  
Page 1

**Eastern Metal Supply, Inc.**

**NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED**

**1. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL #03-0542**

**A. DRAWINGS:**

1. *Drawing No. 03-033, titled " Bertha High Velocity Accordion Shutter System ", sheets 1 through 12 of 12, prepared by Tilteco, Inc., dated May 20, 2003, last revision #1 dated October 6, 2003, signed and sealed by Walter A. Tillit Jr., P.E.*

**B. TESTS:**

1. *Test report on Large Missile Impact Test, Cyclic Wind Pressure Test, and Uniform Static Air Pressure Test of Accordion Shutter, prepared by American Test Lab of South Florida, Report No. ATL SF #0214.01-03, dated 07/18/03, signed and sealed by William R. Mehner, P.E and Henry Hattem, P.E.*

**C. CALCULATIONS:**

1. *Comparative Analysis and Anchor calculation, dated June 17, 2003, sheets 1 through 194, prepared by Tilteco, Inc., signed and sealed by Walter A. Tillit Jr., P.E.*
2. *Anchor analysis dated October 06, 2003, one sheet, prepared by Tilteco, Inc., signed and sealed by Walter A. Tillit Jr., P.E.*

**D. QUALITY CONTROL**

1. *By Miami-Dade County Building Code Compliance Office.*

**E. MATERIAL CERTIFICATION:**

1. *Mill Certified Test Report issued by Indalex with chemical composition and mechanical properties for aluminum alloy 6063-T6.*
2. *Tensile Test Report No. 3DM-388, two sheets, prepared by QC Metallurgical, Inc., dated May 20, 2003, signed and sealed by Frank E. Grate Jr., P.E.*

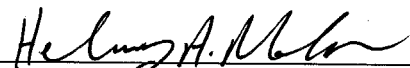
**2. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL # 04-0052**

**A. DRAWINGS:**

1. *Drawing No. 03-033, titled " Bertha High Velocity Accordion Shutter System ", sheets 1 through 14 of 14, prepared by Tilteco, Inc., dated May 20, 2003, last revision #3 dated January 21, 2004, signed and sealed by Walter A. Tillit Jr., P.E.*

**B. TESTS:**

1. *Test report on Large Missile Impact Test, Cyclic Wind Pressure Test, and Uniform Static Air Pressure Test of Accordion Shutter, prepared by American Test Lab of South Florida, Report No. ATL SF #0214.01-03, dated 07/18/03, signed and sealed by William R. Mehner, P.E and Henry Hattem, P.E.*



Helmy A. Makar, P.E., M.S.

Product Control Examiner

NOA No. 07-0509.14

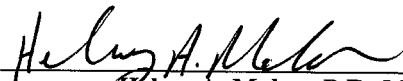
Expiration Date: 08/02/2012

Approval Date: 08/02/2007

**Eastern Metal Supply, Inc.**

**NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED**

2. *Test report on Large Missile Impact Test and Cyclic Wind Pressure Test of Accordion Shutter, prepared by American Test Lab of South Florida, Report No. ATL SF #0715.01-03, dated 01/21/04, signed and sealed by William R. Mehner, P.E and Henry Hattem, P.E.*
- C. **CALCULATIONS:**
  1. *Anchor calculation, dated November 3, 2003, sheets 1 through 43 of 43, prepared by Tilteco, Inc., signed and sealed by Walter A. Tillit Jr., P.E.*
- D. **QUALITY CONTROL**
  1. *By Miami-Dade County Building Code Compliance Office.*
- E. **MATERIAL CERTIFICATION:**
  1. *None.*
3. **EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL #05-0227**
- A. **DRAWINGS:**
  1. *Drawing No. 05-072, titled " Bertha HV Accordion Shutter System ", sheets 1 through 14 of 14, prepared by Tilteco, Inc., dated May 19, 2005, last revision #2 dated July 12, 2005, signed and sealed by Walter A. Tillit Jr., P.E.*
- B. **TESTS:**
  1. *None.*
- C. **CALCULATIONS:**
  1. *None.*
- D. **QUALITY CONTROL**
  1. *By Miami-Dade County Building Code Compliance Office.*
- E. **MATERIAL CERTIFICATION:**
  1. *None.*
- F. **OTHERS**
  1. *Letter from Tilteco, Inc., dated July 12, 2005, signed and sealed by Walter A. Tillit Jr., P.E., certifying that drawing #05-072 is in compliance with the 2004 Edition of the Florida Building Code. Also, states that drawings 05-072 revises drawings 03-033 which is certified for code compliance in accordance with the 2001 Edition of the Florida Building Code.*



Helmy A. Makar, P.E., M.S.  
Product Control Examiner  
NOA No. 07-0509.14  
Expiration Date: 08/02/2012  
Approval Date: 08/02/2007

**NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED**

**4. NEW EVIDENCE SUBMITTED**

**A. DRAWINGS:**

1. *Drawing No. 05-363, titled " Bertha HV Accordion Shutter System ", sheets 1 through 26 of 26, prepared by Tilteco, Inc., dated January 17, 2006, last revision #2 dated October 06, 2006, signed and sealed by Walter A. Tillit Jr., P.E.*

**B. TESTS:**

1. *Test report on Large Missile Impact Test, Cyclic Wind Pressure Test, and Uniform Static Air Pressure Test of Accordion Shutter, prepared by American Test Lab of South Florida, Report No. ATL SF #0422.01-05, dated 09/16/05, signed and sealed by William R. Mehner, P.E and Henry Hattem, P.E.*
2. *Test report on Large Missile Impact Test, Cyclic Wind Pressure Test of Accordion Shutter, prepared by American Test Lab of South Florida, Report # ATL SF #1004.01-05, dated 11/16/05, signed & sealed by William R. Mehner, P.E & Henry Hattem, P.E.*
3. *Test report on Large Missile Impact Test, Cyclic Wind Pressure Test of Accordion Shutter, prepared by American Test Lab of South Florida, Report No. ATL SF #1214.01-05, dated 12/19/05, signed and sealed by William R. Mehner, P.E and Henry Hattem, P.E.*
4. *Test report on Large Missile Impact Test, Cyclic Wind Pressure Test of Accordion Shutter, prepared by American Test Lab of South Florida, Report No. ATL SF #0317.02-06, dated 05/23/05, signed and sealed by William R. Mehner, P.E and Henry Hattem, P.E.*

**C. CALCULATIONS:**

1. *Comparative Analysis and Anchor calculation, dated September 08, 2006, sheets 1 through 298, prepared by Tilteco, Inc., signed and sealed by Walter A. Tillit Jr., P.E.*

**D. QUALITY CONTROL**

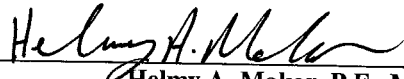
1. *By Miami-Dade County Building Code Compliance Office.*

**E. MATERIAL CERTIFICATION**

1. *Mill Certified Test Report issued by Indalex with chemical composition and mechanical properties for aluminum alloy 6005-T5.*
2. *Tensile Test Report No. 5JM-1022, 3 samples of 1004.01-05 Specimens A, B, C, prepared by QC Metallurgical, Inc., dated November 16, 2006, signed and sealed by Frank E. Grate Jr., P.E.*
3. *Tensile Test Report No. 5FM-578, 3 samples of 0422.01-05 Specimens A, B, C, prepared by QC Metallurgical, Inc., dated July 06, 2005, signed and sealed by Frank E. Grate Jr., P.E.*

**F. NOTES**

1. *This approval is selected details from Approval #05-0227.*



Helmy A. Makar, P.E., M.S.  
Product Control Examiner  
NOA No. 07-0509.14  
Expiration Date: 08/02/2012  
Approval Date: 08/02/2007

GENERAL NOTES:

1. BERTHA H.V. ACCORDION SHUTTER SYSTEM SHOWN ON THIS PRODUCT APPROVAL DOCUMENT (P.A.D.) HAS BEEN VERIFIED FOR COMPLIANCE IN ACCORDANCE WITH THE 2004 EDITION OF THE FLORIDA BUILDING CODE WITH THE 2005 AND 2006 SUPPLEMENTS. THIS ACCORDION SHUTTER SYSTEM MAY BE INSTALLED AT HIGH VELOCITY HURRICANE ZONES. DESIGN WIND LOADS SHALL BE DETERMINED AS PER SECTION 1620 OF THE ABOVE MENTIONED CODE. IN ORDER TO VERIFY THAT ANCHORS ON THIS P.A.D., AS TESTED, WERE NOT OVERSTRESSED, A 33 % INCREASE IN ALLOWABLE LOADS FOR WIND LOADS WAS **NOT** USED IN THEIR ANALYSIS. BERTHA H.V. ACCORDION SHUTTER SYSTEM'S ADEQUACY FOR WIND AND LARGE MISSILE IMPACT LOAD HAS BEEN VERIFIED IN ACCORDANCE WITH SECTION 1609.1.4 OF THE ABOVE MENTIONED CODE AS PER ATL REPORTS:  
-HV BLADE ① #0214.01-03, #0715.01-03, #1004.01-05, #1214.01-05 AND 0317.02-06 AS PER HIGH VELOCITY HURRICANE ZONE TAS-201, TAS-202 AND TAS-203 PROTOCOLS
2. BERTHA H.V. ACCORDION PINS (HV SCREWS), USED AT BLADES KNUCKLE AND FOR DIRECT MOUNT CONNECTION TO TRACKS SHALL BE # 14X2.75 AND # 14X1.75 RESPECTIVELY. 410-HT MINIMUM SERIES STAINLESS STEEL SCREWS WITH 135.0 ksi YIELD STRENGTH AND 180 ksi TENSILE STRENGTH. PINS SHALL BE COATED WITH BERTHA HV DACROSHIELD COATING SYSTEM AS MANUFACTURED BY APPROVED COATING APPLICATORS, REGISTERED WITH AMERICAN SHUTTER SYSTEMS ASSOCIATION. PINS MUST BEAR THE HV MARKING ON THEIR HEAD.
3. ALL ALUMINUM EXTRUSIONS SHALL BE ALUMINUM ASSOCIATION ALLOY AND TEMPER AS INDICATED ON SHEET 2. MINIMUM YIELD STRENGTH FOR 6063-T6 ALLOY IS 30.0 ksi.
4. ALL SCREWS TO BE STAINLESS STEEL 304 OR 316 AISI SERIES OR CORROSION RESISTANT COATED CARBON STEEL AS PER DIN 50018 WITH 50 ksi MIN. YIELD STRENGTH AND 90 ksi MIN. TENSILE STRENGTH.
5. BOLTS TO BE ASTM A-307 GALVANIZED STEEL, OR AISI 304 OR 316 SERIES STAINLESS STEEL WITH 35 ksi MINIMUM YIELD STRENGTH.
6. SEE THE FOLLOWING SHEETS FOR ANCHOR SPECIFICATIONS: HV BLADE ① : 7, 8 AND 9.
7. THIS BERTHA H.V. ACCORDION SHUTTER SYSTEM BEARS A U.S. PATENT #6'779,582. COMPONENTS OF THIS APPROVAL ARE COVERED, IN WHOLE OR IN PART BY U.S. PATENT #5'458,179 ISSUED TO EASTERN METAL SUPPLY, INC.
8. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE SOUNDNESS OF THE STRUCTURE WHERE SHUTTER IS TO BE ATTACHED TO INSURE PROPER ANCHORAGE. CONTRACTOR TO SEAL/CAULK ALL SHUTTER COMPONENT EDGES WHICH REMAIN, THRU FASTENING IN CONTINUOUS CONTACT WITH THE BUILDING TO PREVENT WIND/RAIN INTRUSION.
9. EACH UNIT MUST BEAR PERMANENT LABEL IN A VISIBLE PLACE WITH WARNING NOTE: DURING PERIODS OF HURRICANE WARNINGS HOME OWNER, TENANT, OR OTHERS, MUST PROPERLY CLOSE ALL HV CENTERMATES AND ENGAGE OR LOCK ALL HV LOCKS.
10. SHUTTER'S MANUFACTURER LABEL SHALL BE PLACED ON A READILY VISIBLE LOCATION. ONE LABEL SHALL BE PLACED FOR EVERY OPENING. LABEL SHALL READ AS FOLLOWS:  
**EASTERN METAL SUPPLY, INC.**  
LAKEWORTH, FL.  
MIAMI-DADE COUNTY PRODUCT CONTROL APPROVED.
11. BERTHA H.V. ACCORDION SHUTTER SYSTEM'S INSTALLATION SHALL COMPLY WITH SPECS INDICATED IN THIS DRAWING PLUS ANY BUILDING AND ZONING REGULATIONS PROVIDED BY THE JURISDICTION WHERE PERMIT IS APPLIED TO.
12. (a) THIS P.A.D. PREPARED BY THIS ENGINEER IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SITE SPECIFIC PROJECT; i.e. WHERE THE SITE CONDITIONS DEVIATE FROM THE P.A.D.
- (b) CONTRACTOR TO BE RESPONSIBLE FOR THE SELECTION, PURCHASE AND INSTALLATION INCLUDING LIFE SAFETY OF THIS PRODUCT, BASED ON THIS P.A.D., PROVIDED HE/SHE DOES NOT DEVIATE FROM THE CONDITIONS DETAILED ON THIS DOCUMENT. CONSTRUCTION SAFETY AT SITE IS THE CONTRACTOR'S RESPONSIBILITY.
- (c) THIS P.A.D. WILL BE CONSIDERED INVALID IF ALTERED BY ANY MEANS.
- (d) SITE SPECIFIC PROJECTS SHALL BE PREPARED BY A FLORIDA REGISTERED ENGINEER OR ARCHITECT WHICH WILL BECOME THE ENGINEER OF RECORD (E.O.R.) FOR THE PROJECT AND WHO WILL BE RESPONSIBLE FOR THE PROPER USE OF THE P.A.D. ENGINEER OF RECORD, ACTING AS A DELEGATED ENGINEER TO THE P.A.D. ENGINEER SHALL SUBMIT TO THIS LATTER THE SITE SPECIFIC DRAWINGS FOR REVIEW.
- (e) THIS P.A.D. SHALL BEAR THE DATE AND ORIGINAL SEAL AND SIGNATURE OF THE PROFESSIONAL ENGINEER OF RECORD THAT PREPARED IT.

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F.B.C.(High Velocity Hurricane Zone)

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**BERTHA HV™**  
Accordion Shutter System

REV. No	DESCRIPTION	DATE	Drawn by: F.P.
1	GENERAL	07/09/07	DATE: 04/24/07
2			DRAWING No <b>07-103</b>
3			
4			
5			SHEET <b>1 OF 10</b>
6			

Approved as complying with the  
Florida Building Code  
Date 08/02/2007  
NOA# 07-0509.14  
Miami Dade Product Control  
Division  
By Helmy A. Moham

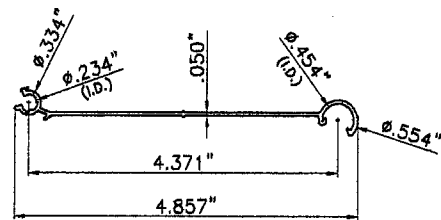
JUL 10 2007  
P.E. SEAL/SIGNATURE/DATE



TILLIT TESTING & ENGINEERING COMPANY  
6355 N.W. 36th. St., Ste. 305, VIRGINIA GARDENS, FLORIDA 33166  
Phone : (305)871-1530 . Fax : (305)871-1531  
e-mail: tilteco@aol.com  
EB-0006719  
WALTER A. TILLIT Jr. P. E.  
FLORIDA Lic. # 44167

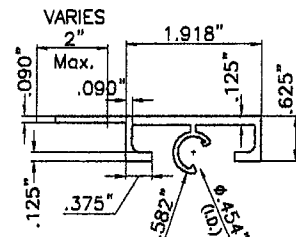
**EASTERN METAL SUPPLY, INC.**  
(ASSA # 1)

3600 23 AVE. SOUTH  
LAKEWORTH, FL 33461  
PH: (561)533-6061 FAX: (561)588-4780



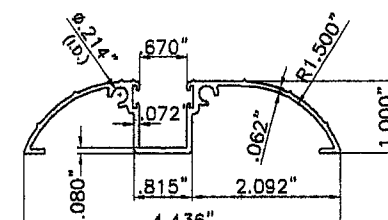
# 1 HV BLADE

COVERED UNDER US PATENT # 5458179  
6063-T6 ALLOY AND TEMPER



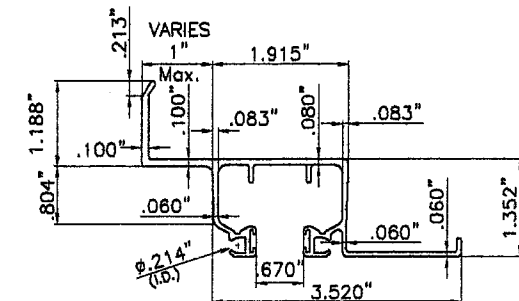
# 4 HV DIRECT MOUNT

6063-T6 ALLOY AND TEMPER



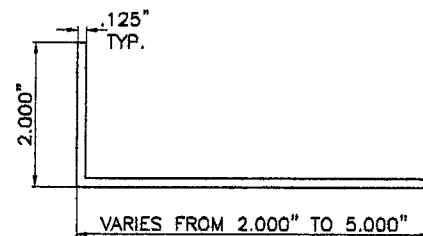
# 8 HV WALK-OVER TRACK

6063-T6 ALLOY AND TEMPER



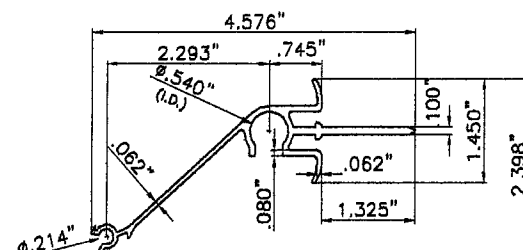
# 12 HV HEADER/SILL

6063-T6 ALLOY AND TEMPER



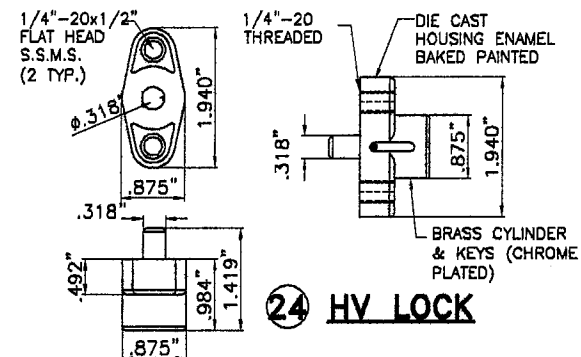
# 17 B.O. WALL ANGLE

6063-T6 ALLOY AND TEMPER

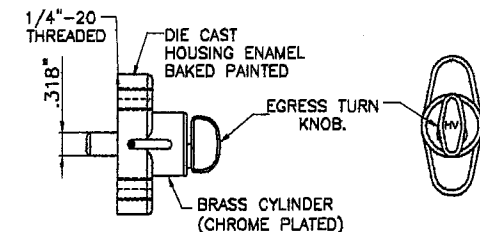


# 21 HV CENTERMATE

6063-T6 ALLOY AND TEMPER



# 24 HV LOCK



# 25 HV EGRESS LOCK

Approved as complying with the  
Florida Building Code  
Date 08/02/2007  
NOA# 07-0509-14  
Miami Code Product Control  
Division  
By Helmy Alkhatib

JUL 10 2007

P.E. SEAL/SIGNATURE/DATE



TILLIT TESTING & ENGINEERING COMPANY  
6355 N.W. 36th. St., Ste. 305, VIRGINIA GARDENS, FLORIDA 33166  
Phone : (305)871-1530 . Fax : (305)871-1531  
e-mail: tilteco@aol.com  
EB-0006719  
WALTER A. TILLIT Jr. P. E.  
FLORIDA Lic. # 44167

**EASTERN METAL SUPPLY, INC.**  
(ASSA # 1)

3600 23 AVE. SOUTH  
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PH: (561)533-6061 FAX: (561)588-4780

F.B.C.(High Velocity Hurricane Zone)

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**BERTHA HV™**  
Accordion Shutter System

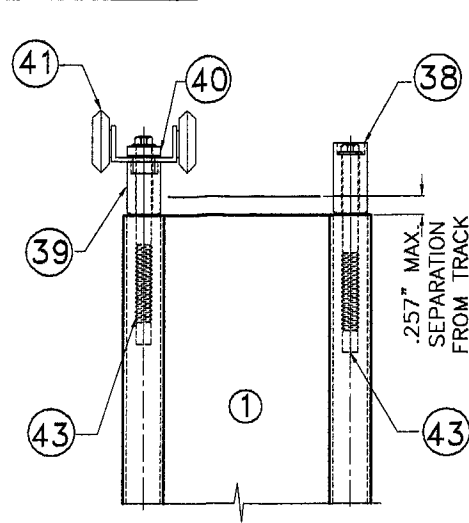
REV. No	DESCRIPTION	DATE	Drawn by: F.P.
1	GENERAL	07/09/07	DATE: 04/24/07
2			
3			DRAWING No
4			07-103
5			SHEET
6			2 OF 10

SHUTTER ASSEMBLY SCHEDULE FOR HV ①	
①	HV BLADE 1
③⑧	HV LONG RECESSED NYLON BUSHING
③⑨	HV SHORT RECESSED NYLON BUSHING
④①	HV NYLON HAT WASHER
④①	HV WHEEL CARRIAGE AISI 302-303 SERIES Ø.870"x3/16" THICK NYLON WHEEL. 0.188"Ø AISI 302 SERIES S.S. RIVETS
④②	#14 x 1 3/4" ACCORDION PIN W/ #8 HEAD
④③	#14 x 2 3/4" ACCORDION PIN W/ #8 HEAD

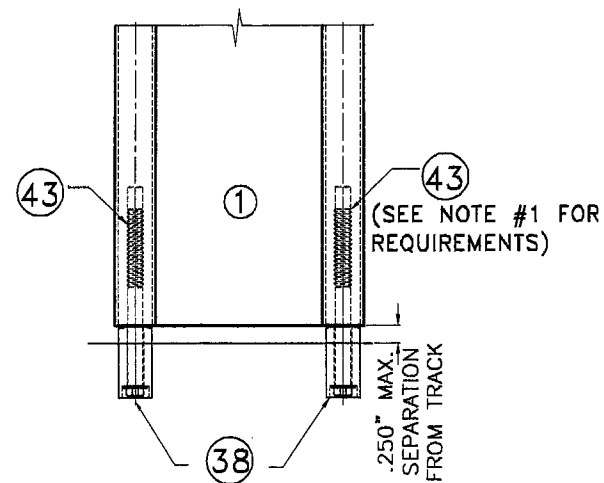
#### HV PIN REQUIREMENTS

(1) HV PIN ④③ SHALL ALWAYS BE USED AT ALL (EXTERIOR AND INTERIOR, TOP AND BOTTOM) KNUCKLES.

(2) HV PIN ④② OR ④③ W/ 1/2" O.D. 1/16" THICK S.S. WASHER SHALL BE USED FOR DIRECT MOUNT INSTALLATION (OF COMPONENT # 4) PER DETAIL X, SHEETS 6 AND 10.

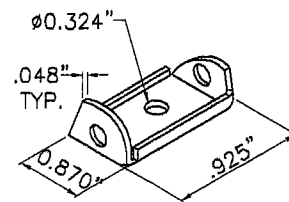


EXTERIOR



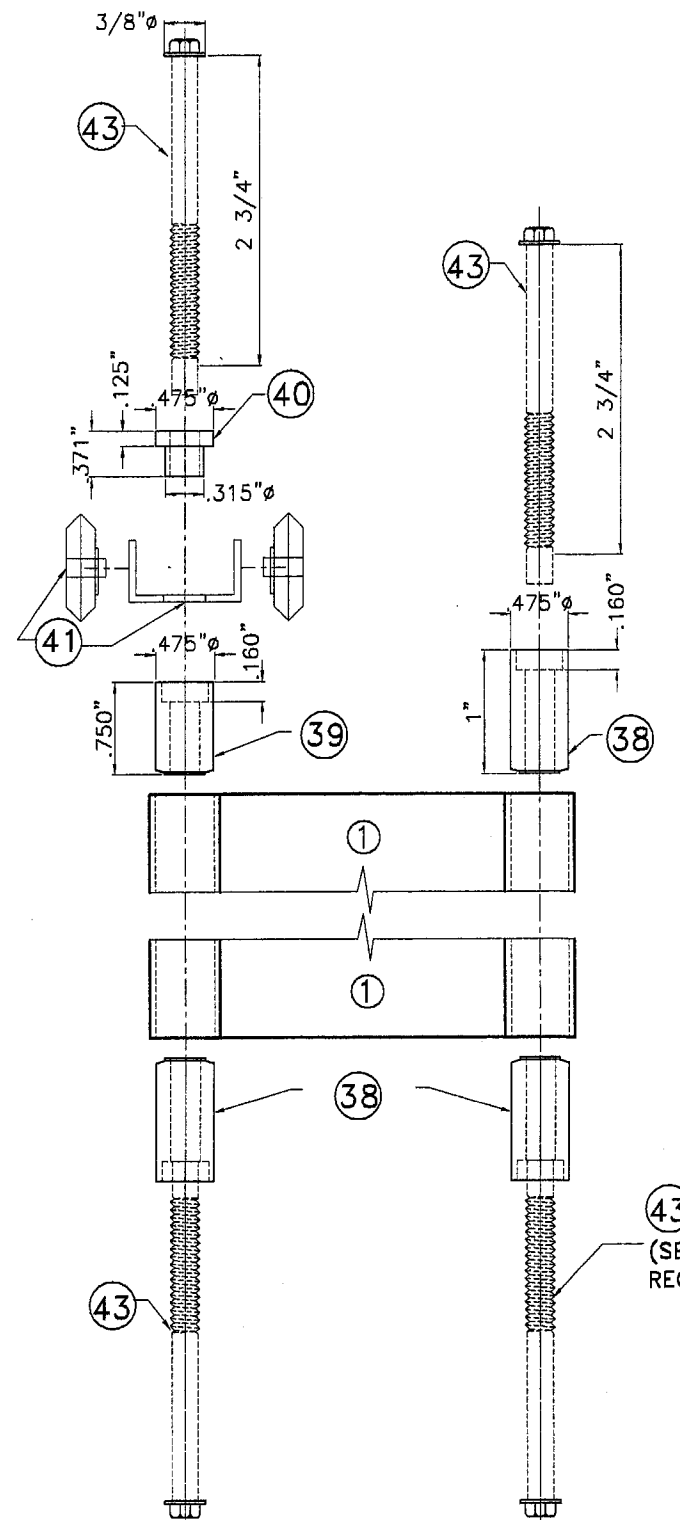
#### TYPICAL SHUTTER ASSEMBLY

SCALE: 3/8" = 1"



#### WHEEL CARRIAGE DETAIL

N.T.S.



EXTERIOR

#### ASSEMBLY LAYOUT

N.T.S.

F.B.C.(High Velocity Hurricane Zone)

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Approved as complying with the  
Florida Building Code  
Date: 08/02/2007  
NOA# 07-0569.14  
Miami Dade Product Control  
Division  
By: Helmy A. Moha

JUL 10 2007

P.E. SEAL/SIGNATURE/DATE



TILLIT TESTING & ENGINEERING COMPANY  
6355 N.W. 36th. St., Ste. 305, VIRGINIA GARDENS, FLORIDA 33166  
Phone : (305)871-1530 . Fax : (305)871-1531  
e-mail: tilteco@aol.com  
EB-0006719  
WALTER A. TILLIT Jr. P. E.  
FLORIDA Lic. # 44167

**EASTERN METAL SUPPLY, INC.**  
(ASSA # 1)

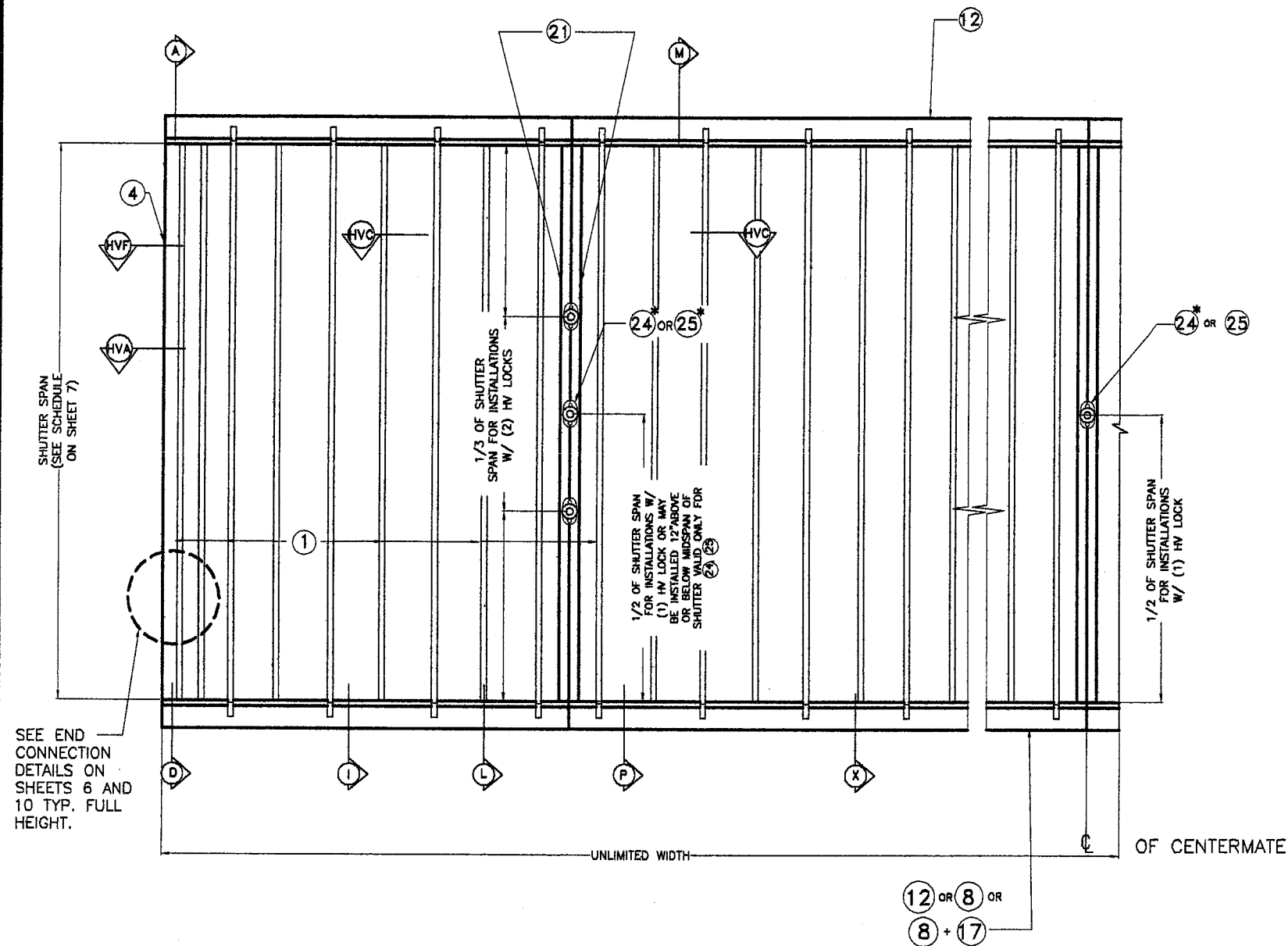
3600 23 AVE. SOUTH  
LAKEWORTH, FL 33461  
PH: (561)533-6061 FAX: (561)588-4780

### BERTHA HV™ Accordion Shutter System

REV. No	DESCRIPTION	DATE	Drawn by: F.P.
1	GENERAL	07/09/07	DATE: 04/24/07
2			
3			
4			
5			
6			

DRAWING No  
**07-103**

SHEET  
**3 OF 10**



**TYPICAL SHUTTER ELEVATION**  
N.T.S.

**\* NOTES ON HV LOCKS AND CENTERMATES:**

- MANDATORY CONDITION #1:** ONE HV LOCK (24) or (25) SHALL BE USED AT 1/2 OF SHUTTER SPAN FOR ANY SPAN OR 12" ABOVE OR BELOW 1/2 OF SHUTTER SPAN FOR SPANS UP TO 90", AND FOR INSTALLATIONS AT ANY ELEVATION. HV LOCK (24) or (25) MAY BE USED AS AN INSIDE OR OUTSIDE LOCK, ATTACHED TO (21) CENTERMATE W/(2) 1/4"  $\phi$ -20 x 1/2" LONG FLAT HEAD S.S. M.S. LOCATION OF LOCK SHALL BE AS INDICATED ON TYPICAL SHUTTER ELEVATION.
- OPTIONAL CONDITION #1:** IF DESIRED, FOR BETTER PERFORMANCE OR FOR SECURITY PURPOSES, UP TO TWO HV LOCKS (24) OR (25) MAY BE USED AS AN INSIDE OR OUTSIDE LOCK. CONNECTION OF LOCKS TO CENTERMATES (21) SHALL BE AS INDICATED ON NOTE (1) ABOVE. LOCATION OF LOCKS SHALL BE AS INDICATED ON TYPICAL SHUTTER ELEVATION.

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**BERTHA HV™**  
**Accordion Shutter System**

REV. No	DESCRIPTION	DATE	Drawn by: F.P.
1	GENERAL	07/09/07	DATE: 04/24/07
2			
3			
4			
5			
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DRAWING No  
**07-103**

SHEET  
**4 OF 10**

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Date 08/02/2007  
NOAH 07-0509-14  
Miami Dade Product Control  
Division  
By Helmy A. Madan

[Signature]  
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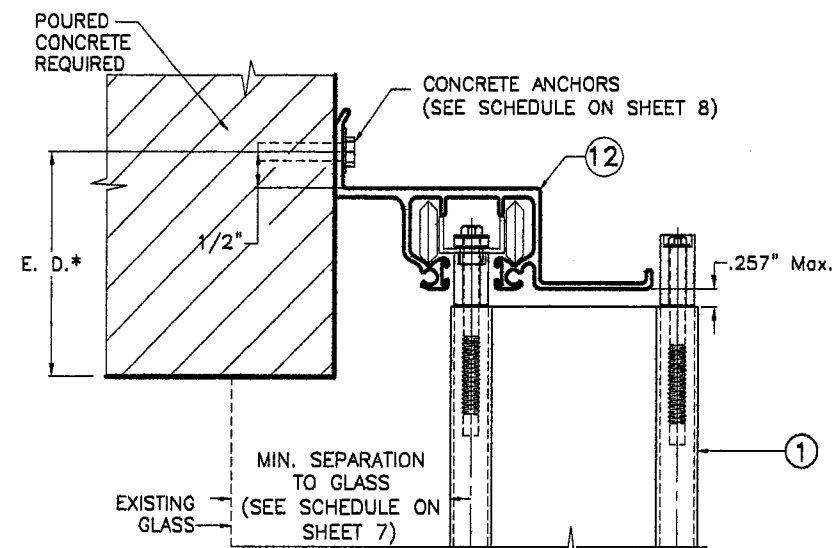


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5355 N.W. 36th. St., Ste. 305, VIRGINIA GARDENS, FLORIDA 33166  
Phone : (305)871-1530 . Fax : (305)871-1531  
e-mail: tilteco@aol.com  
EB-0006719  
WALTER A. TILLIT Jr. P. E.  
FLORIDA Lic. # 44167

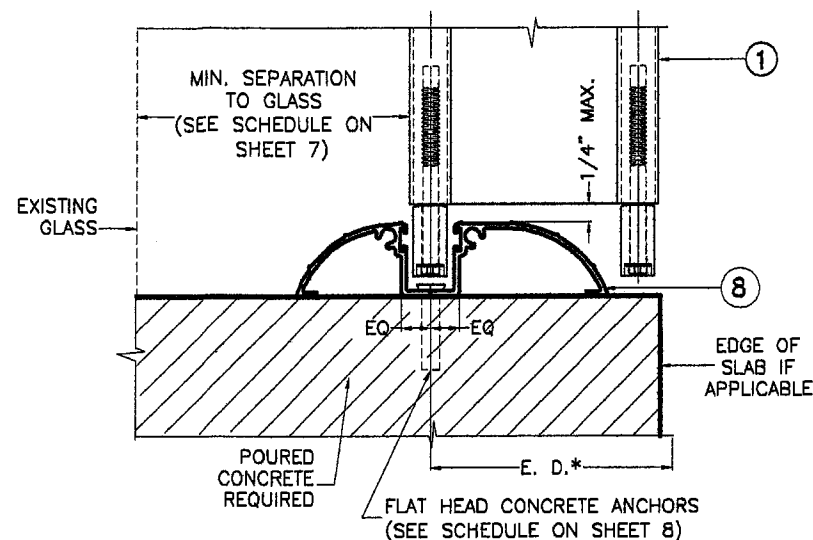
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LAKEWORTH, FL 33461  
PH: (561)533-6061 FAX: (561)588-4780

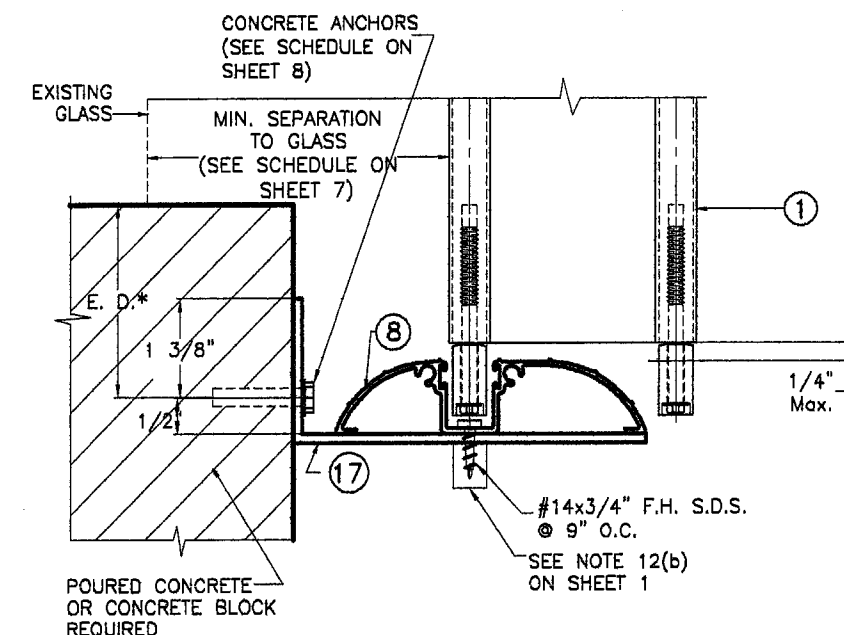




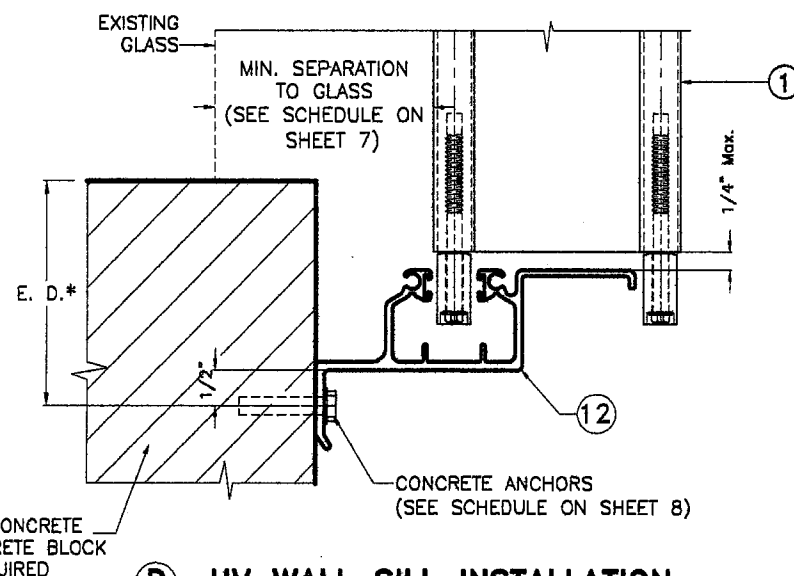
**A HV WALL HEADER INSTALLATION**



**I HV WALK-OVER INSTALLATION**



**L HV WALL WALK-OVER INSTALLATION**



**D HV WALL SILL INSTALLATION**

**NOTE FOR COMBINATION OF SECTIONS:**

1- SEE SHEET 3 FOR TYPICAL SHUTTER ASSEMBLY  
2- MOUNTING SECTIONS CAN BE COMBINED IN ANY WAY TO SUIT ANY INSTALLATION.

\* E. D. = EDGE DISTANCE  
(SEE SPECIFICATIONS ON SHEET 7)

**INSTALLATION DETAILS**

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**Accordian Shutter System**

REV. No	DESCRIPTION	DATE	Drawn by: F.P.
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*[Signature]*

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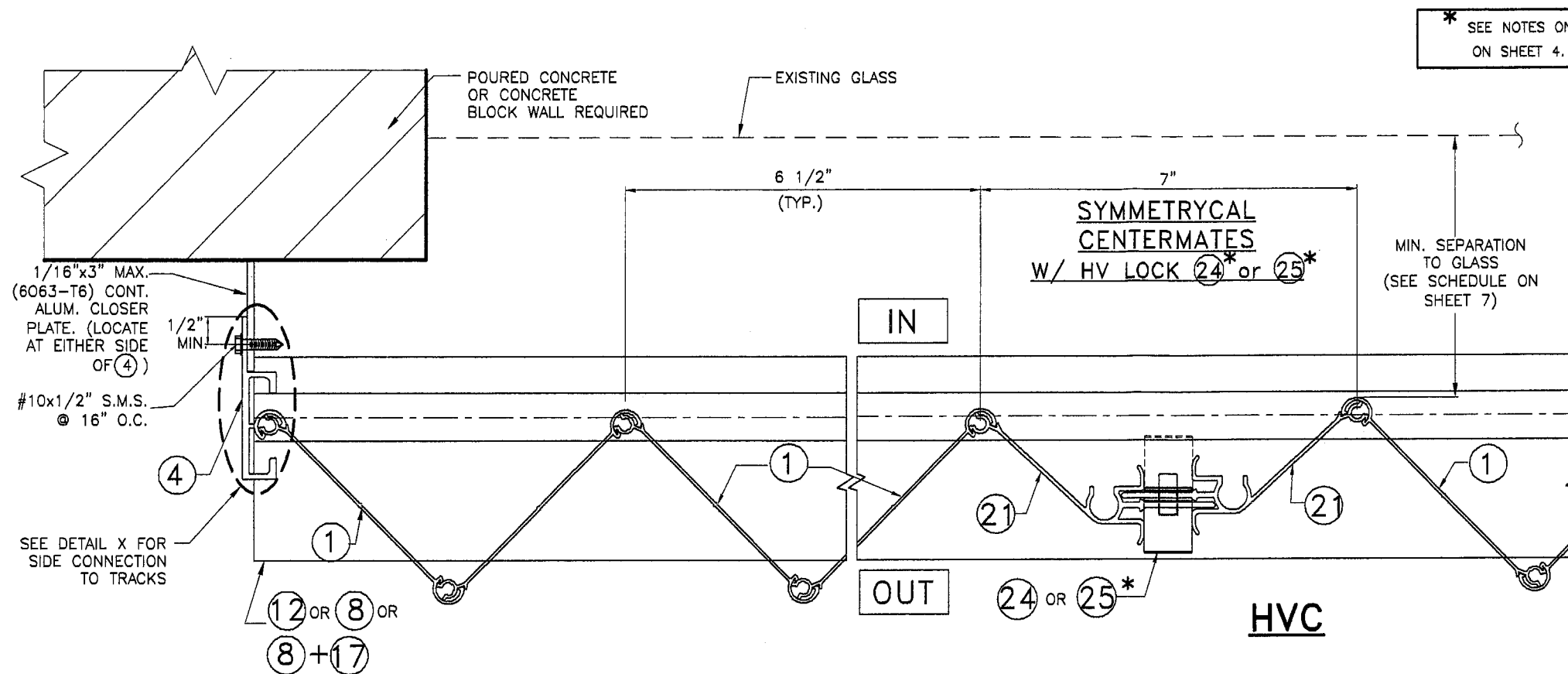
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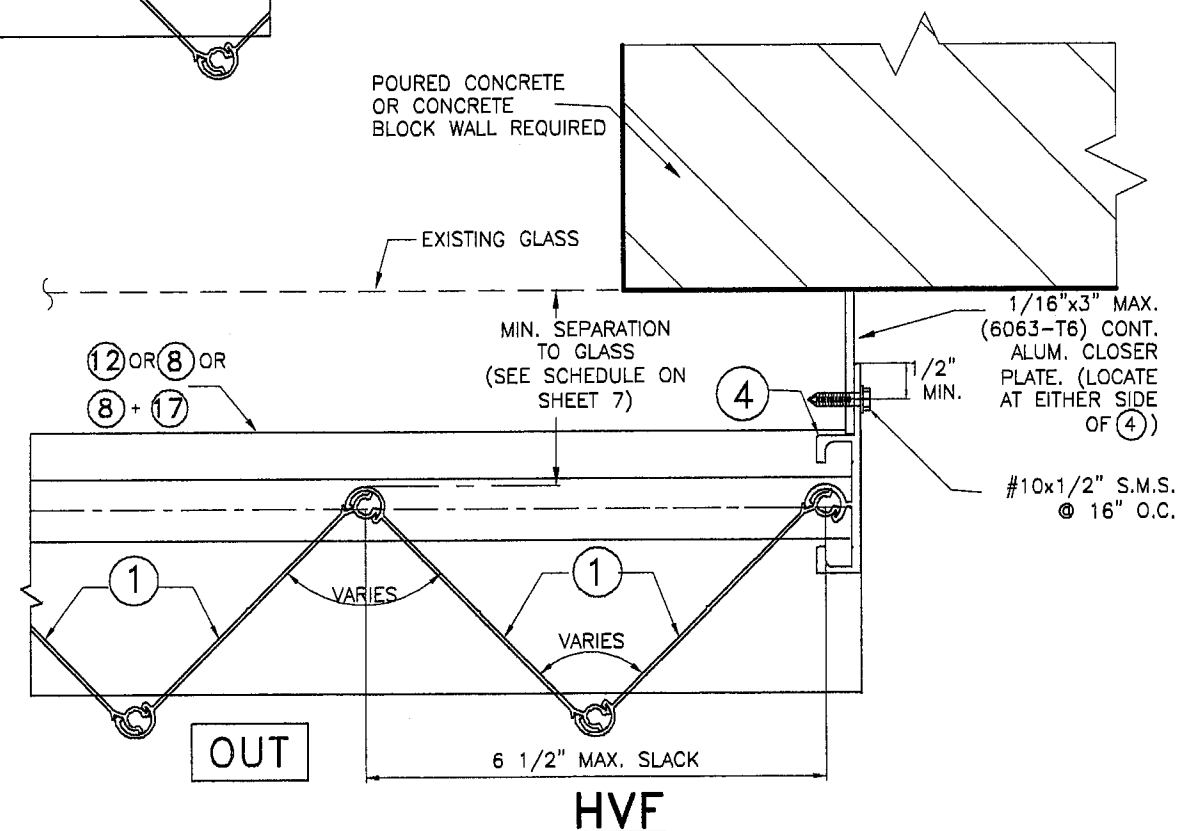
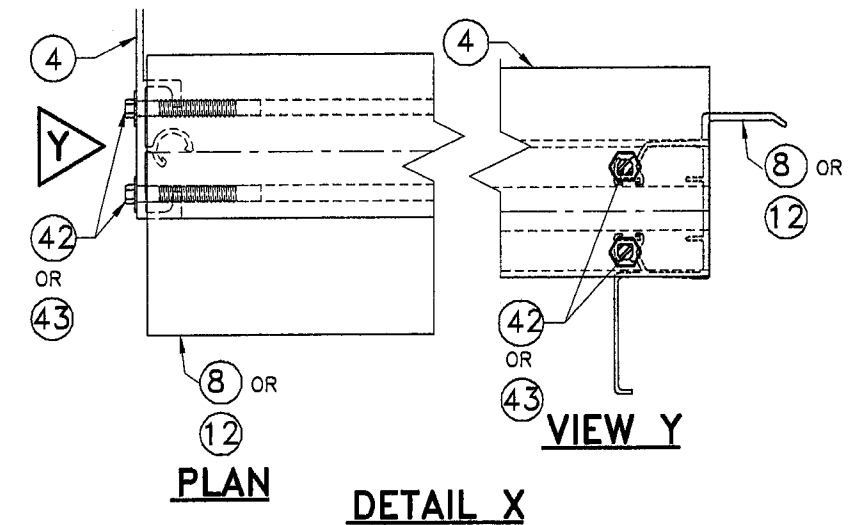
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**END CONNECTION DETAIL**

\* SEE NOTES ON HV LOCKS 24 or 25 ON SHEET 4.



**INSTALLATIONS W/ 1 HV BLADE W/ HV CENTERMATE 21 INTO CONCRETE OR CONCRETE BLOCK WALL.**

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TILLIT TESTING & ENGINEERING COMPANY  
6355 N.W. 36th. St., Ste. 305, VIRGINIA GARDENS, FLORIDA 33166  
Phone : (305)871-1530 . Fax : (305)871-1531  
e-mail: tilteco@aol.com  
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WALTER A. TILLIT Jr. P. E.  
FLORIDA Lic. # 44167

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(ASSA # 1)

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**BERTHA HV™**  
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SCHEDULE #1

MAXIMUM SHUTTER SPAN "L" (ft.) FOR INSTALLATIONS W/ <u>SYMMETRICAL CENTERMATES</u> (21) W/ ONE HV LOCK (24) or (25) ♦	
MAXIMUM DESIGN LOAD (p.s.f.) (+ OR -)	CONCRETE & WOOD INSTALLATIONS ▲
	WALL MOUNTING OR WALL/FLOOR MOUNTING
	"L" (ft)
75	7'-6"

▲ MAXIMUM SHUTTER SPAN "L" FOR INSTALLATIONS INTO WOOD SHALL BE LIMITED TO 75 psf. DESIGN LOAD.

INSTALLATION LEGEND		
	CONCRETE & MANSORY	WOOD
WALL MOUNTING	A & L.	M, P & O.
FLOOR MOUNTING	I	X

♦ SEPARATION TO GLASS REQUIREMENTS

SEE BELOW FOR MINIMUM SEPARATION TO GLASS SCHEDULE FOR SHUTTERS INSTALLED WITHIN THE FIRST 30'-0" ELEVATION OF BUILDING MEASURED AT BOTTOM OF SHUTTER.

MINIMUM SEPARATION TO GLASS SCHEDULE:  
SHUTTER W/ ONE LOCK

SHUTTER SPAN	INSTALLATION W/ <u>SYMMETRICAL</u> CENTERMATES
90" OR LESS	3 5/16"
<u>MINIMUM SEPARATION TO GLASS SCHEDULE: SHUTTER W/ TWO LOCKS</u>	
SHUTTER SPAN	INSTALLATION W/ <u>SYMMETRICAL</u> CENTERMATES
90" OR LESS	2 3/4"

\*SPECIFICATIONS ON ANCHOR REQUIREMENTS: POURED CONCRETE OR CONCRETE BLOCK SUBSTRATES

1. ANCHORS TO WALL SHALL BE AS FOLLOWS:

- (A) TO EXISTING POURED CONCRETE: (Min. f'c = 3 ksi)  
- 1/4"Ø TAPCON ANCHORS, AS MANUFACTURED BY I.T.W. RAMSET/ RED HEAD.

NOTES:

A.1) MINIMUM EMBEDMENT INTO POURED CONCRETE OF TAPCON ANCHORS IS 1 3/4".

A.2) IN CASE THAT PRECAST STONE, PRECAST CONCRETE PANELS, PAVERS OR ANY VENEER BE FOUND ON THE EXISTING WALL OR FLOOR, ANCHORS SHALL BE LONG ENOUGH TO REACH THE MAIN STRUCTURE BEHIND SAID WALL FINISHES. ANCHORAGE SHALL BE AS INDICATED ON NOTE A.1) ABOVE. FOR INSTALLATIONS ON VINYL SIDING OR EIFS CONSULT THIS ENGINEER.

(B) TO EXISTING CONCRETE BLOCK WALL: ASTM C-90.

- 1/4"Ø TAPCON ANCHORS, AS MANUFACTURED BY I.T.W. RAMSET/ RED HEAD.

NOTES:

B.1) MINIMUM EMBEDMENT INTO CONCRETE BLOCK OF TAPCON ANCHORS, IS 1 1/4".

B.2) IN CASE THAT PRECAST STONE, PRECAST CONCRETE PANELS, PAVERS OR ANY VENEER BE FOUND ON THE EXISTING WALL OR FLOOR, ANCHORS SHALL BE LONG ENOUGH TO REACH THE MAIN STRUCTURE BEHIND SAID WALL FINISHES. ANCHORAGE SHALL BE AS INDICATED ON NOTE B.1) ABOVE. FOR INSTALLATIONS ON VINYL SIDING OR EIFS CONSULT THIS ENGINEER.

(C) ANCHORS SHALL BE INSTALLED FOLLOWING ALL OF THE RECOMMENDATIONS AND SPECIFICATIONS OF THE ANCHOR'S MANUFACTURER.

(D) SEE SCHEDULE BELOW FOR EDGE DISTANCE (E.D.) VERSUS SPACING RELATIONSHIP FOR ANCHOR.

EDGE DISTANCE VERSUS SPACING FOR ANCHORS

MAXIMUM ANCHOR SPACINGS ARE VALID FOR 3 1/2" EDGE DISTANCE FOR 1/4"Ø TAPCON FOR E. D. LESS THAN THE ABOVE MENTIONED, REDUCE ANCHOR SPACING BY MULTIPLYING SPACING SHOWN ON SCHEDULE BY THE FOLLOWING FACTORS. REDUCED SPACING OBTAINED USING FACTOR SHALL NOT BE LESS THAN MINIMUM SPACING INDICATED BELOW:

ACTUAL E. D.	FACTOR
	1/4"Ø TAPCON
	MIN. SPACING = 3"
3"	0.83
2 1/2"	0.66
2"	0.50

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6			

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Miami Dade Product Control  
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By Helmy A. M...

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TILLIT TESTING & ENGINEERING COMPANY  
3555 N.W. 36th. St., Ste. 305, VIRGINIA GARDENS, FLORIDA 33166  
Phone : (305)871-1530 . Fax : (305)871-1531  
e-mail: tilteco@aol.com  
EB-0006719  
WALTER A. TILLIT Jr. P. E.  
FLORIDA Lic. # 44167

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(ASSA # 1)

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LAKEWORTH, FL 33461  
PH: (561)533-6061 FAX: (561)588-4780

MAXIMUM DESIGN PRESSURE RATING (p.s.f.) AND  
CORRESPONDING MAXIMUM ANCHOR\* SPACING (in.) SCHEDULE  
FOR A GIVEN MAX. SHUTTER SPAN, DESIGN NEGATIVE LOAD  
AND A CORRESPONDING MOUNTING TYPE  
FOR CONCRETE OR CONCRETE BLOCK INSTALLATIONS

(SEE MOUNTINGS A, D, I AND L ON SHEET 5)

\* SEE ANCHOR  
SPECIFICATIONS  
ON SHEET 7

MAXIMUM SPAN (ft)	POURED CONCRETE				POURED CONCRETE/CONCRETE BLOCK			
	Ⓐ WALL HEADER MOUNTING W/ Ⓒ				Ⓛ WALL SILL MOUNTING W/ Ⓜ			
	DESIGN LOAD (psf)				DESIGN LOAD (psf)			
	30	40	60	75	30	40	60	75
3'-0" OR LESS	14	12	10	9	14	12	10	9
4'-0"	14	12	10	9	14	12	10	9
5'-0"	14	12	10	9	14	12	10	9
6'-0"	14	12	10	9	14	12	10	8
7'-0"	14	12	10	9	14	12	9	5
7'-6"	14	12	10	8	14	11.5	7	3

MAXIMUM SPAN (ft)	POURED CONCRETE				POURED CONCRETE/CONCRETE BLOCK			
	Ⓛ WALK OVER MOUNTING W/ Ⓜ AT FLOOR				Ⓛ WALL/WALK OVER MOUNTING W/ Ⓜ			
	DESIGN LOAD (psf)				DESIGN LOAD (psf)			
	30	40	60	75	30	40	60	75
3'-0" OR LESS	14	12	10	9	5	5	5	5
4'-0"	14	12	10	9	5	5	5	5
5'-0"	14	12	10	9	5	5	5	5
6'-0"	14	12	10	9	5	5	5	5
7'-0"	14	12	10	9	5	5	5	5
7'-6"	14	12	10	8	5	5	5	5

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6355 N.W. 36th. St., Ste. 305, VIRGINIA GARDENS, FLORIDA 33166  
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EB-0006719  
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MAXIMUM DESIGN PRESSURE RATING (p.s.f.) AND CORRESPONDING MAXIMUM ANCHOR<sup>+</sup> SPACING (in.) SCHEDULE FOR  
A GIVEN MAX. SHUTTER SPAN, NEGATIVE DESIGN LOAD AND A CORRESPONDING MOUNTING TYPE.

(SEE MOUNTINGS ON SHEET 10).

MAXIMUM SPAN (ft)	SUBSTRATE																											
	SOUTHERN PINE No. 2 W/ MIN. G=0.55, DOUGLAS FIR W/ MIN. G=0.50								SPRUCE PINE FIR NORTH W/ MIN. G=0.43								SPRUCE PINE FIR SOUTH W/ MIN. G=0.36								1/2" MIN. CDX PLYWOOD			
	WALL MOUNTINGS M, O				FLOOR MOUNTINGS X				WALL MOUNTINGS M, O				FLOOR MOUNTINGS X				WALL MOUNTINGS M, O				FLOOR MOUNTINGS X				WALL MOUNTINGS P			
	NEGATIVE DESIGN LOAD (psf)				NEGATIVE DESIGN LOAD (psf)				NEGATIVE DESIGN LOAD (psf)				NEGATIVE DESIGN LOAD (psf)				NEGATIVE DESIGN LOAD (psf)				NEGATIVE DESIGN LOAD (psf)				NEGATIVE DESIGN LOAD (psf)			
	30	40	60	75	30	40	60	75	30	40	60	75	30	40	60	75	30	40	60	75	30	40	60	75	30	40	60	75
3'-0" OR LESS	12	10	10	9	6	6	6	6	12	10	10	9	6	6	6	6	12	10	10	9	6	6	6	6	6	5	4	4
4'-0"	12	10	10	9	6	6	6	6	12	10	10	9	6	6	6	6	12	10	10	9	6	6	6	6	6	5	4	4
5'-0"	12	10	10	9	6	6	6	6	12	10	10	9	6	6	6	6	12	10	10	9	6	6	6	6	6	5	4	4
6'-0"	12	10	10	9	6	6	6	6	12	10	10	9	6	6	6	5.5	12	10	10	9	6	6	6	6	6	5	4	4
7'-0"	12	10	10	9	6	6	6	5.5	12	10	10	9	6	6	6	5	12	10	10	7	6	6	6	5	6	5	4	4
7'-6"	12	10	10	7.5	6	6	6	5	12	10	10	6	6	6	5	4.5	12	10	10	4	6	6	5	4.5	6	5	4	-

+ NOTES ON ANCHORS REQUIREMENTS: WOOD SUBSTRATES.

1. ANCHORS TO WALL, FLOOR OR SOLID WOOD SOFFIT SHALL BE AS FOLLOWS:

- 1/4"Ø TAPCON ANCHORS, AS MANUFACTURED BY I.T.W. BUILDDEX W/ MINIMUM EMBEDMENT AS INDICATED AT EACH SECTION ON SHEET 10.  
EXCEPTION: SEE NOTE 2 BELOW.

2. SUBSTRATE SHALL CONSIST OF THE FOLLOWING:

-SOUTHERN PINE No. 2 W/ G=0.55 (N.D.S.)  
-DOUGLAS FIR W/ G=0.50 (N.D.S.)  
-SPRUCE PINE FIR NORTH W/ G=0.43 (N.D.S.)  
-SPRUCE PINE FIR SOUTH W/ G=0.36 (N.D.S.)  
-MIN. 1/2" CDX PLYWOOD (1986 APA)

3. ANCHORS SHALL BE INSTALLED FOLLOWING ALL OF THE RECOMMENDATIONS AND SPECIFICATIONS OF THE ANCHOR'S MANUFACTURER.

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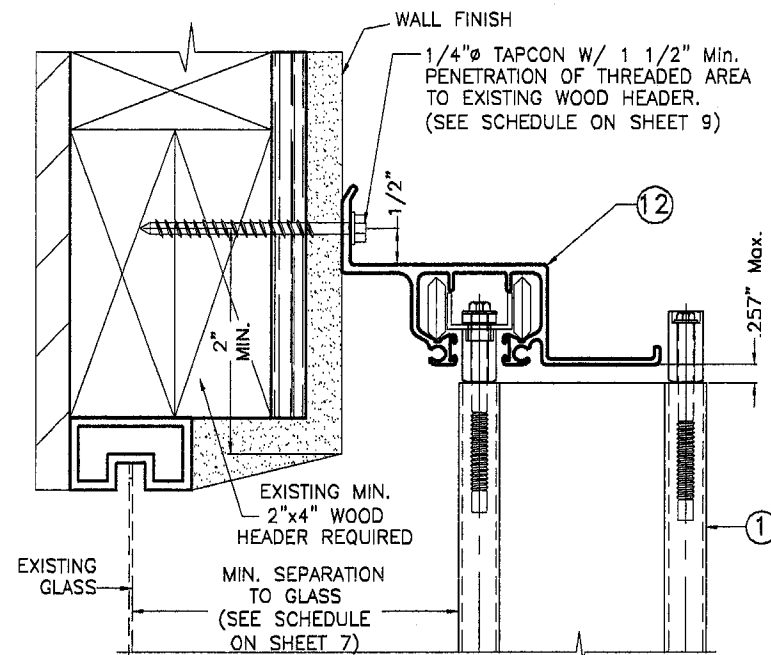


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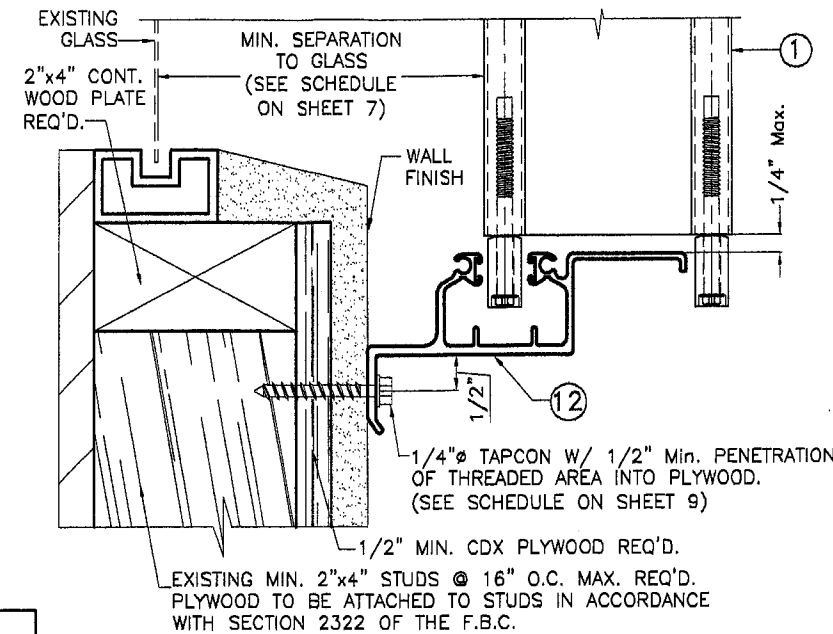
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**INSTALLATION DETAILS ON EXISTING WOOD BUILDINGS FOR ① HV BLADE**  
**MAX. SHUTTER SPAN L FOR INSTALLATIONS INTO WOOD SHALL BE LIMITED**  
**TO 75.0 psf. DESIGN LOAD**

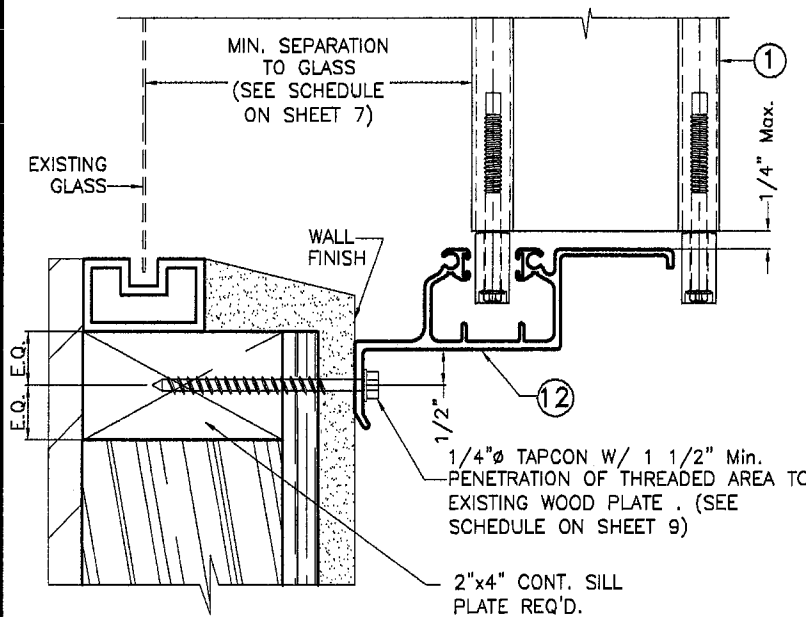


**M HV WALL HEADER INSTALLATION**

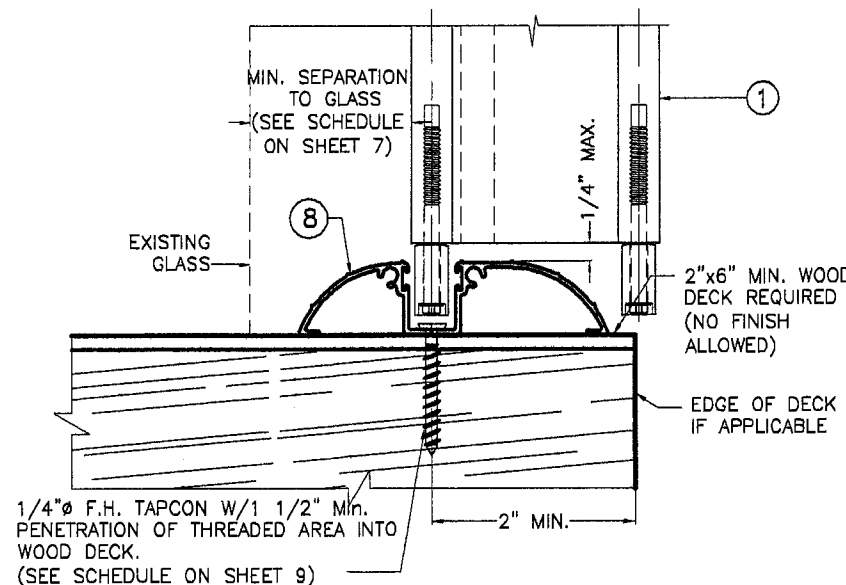
**NOTE:**  
 1-SEE SHEET 3 FOR TYPICAL SHUTTER ASSEMBLY  
 2-MOUNTING SECTIONS CAN BE COMBINED IN ANY WAY TO SUIT ANY INSTALLATION.



**P HV WALL SILL INSTALLATION**

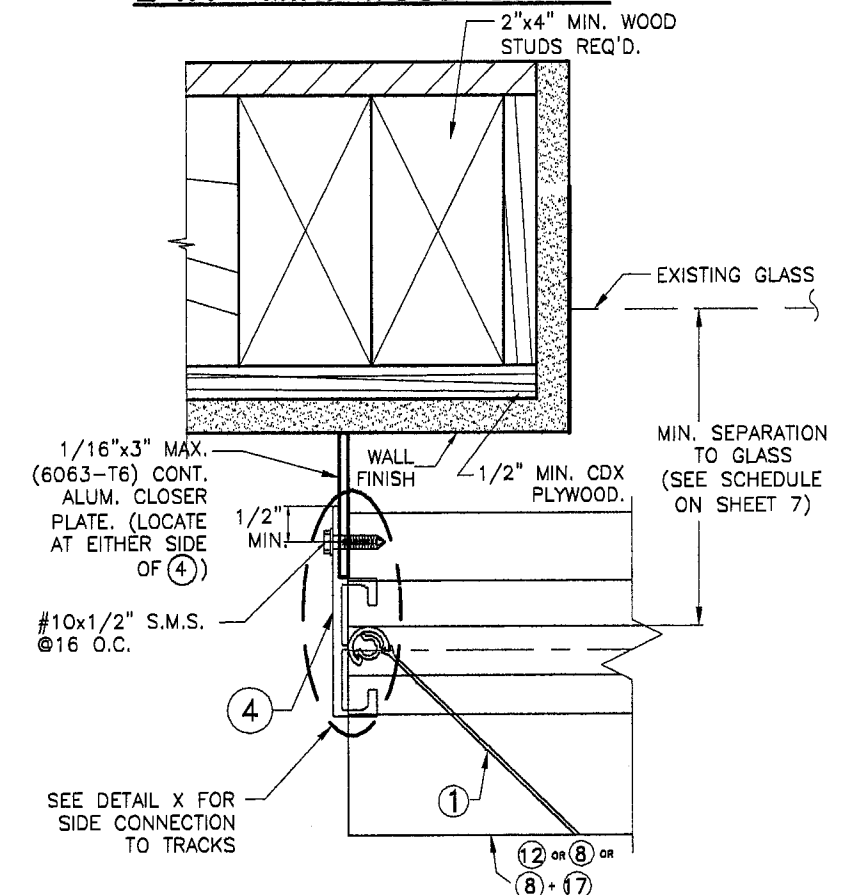


**O HV WALL SILL INSTALLATION**

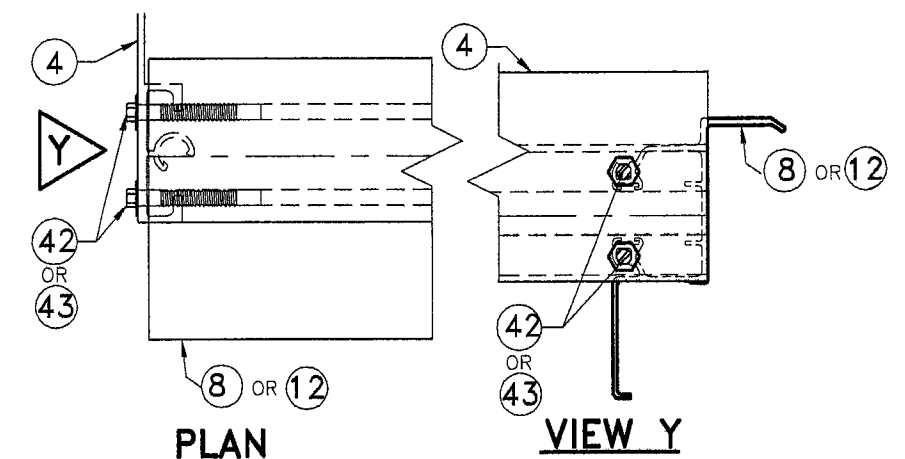


**X HV WALK-OVER INSTALLATION**

**END INSTALLATIONS FOR ① HV BLADE INTO**  
**2"x4" MIN. WOOD STUDS.**



**END CONNECTION DETAIL ⑧**



**PLAN**

**VIEW Y**

**DETAIL X**

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